Amendments to the Claims:

This listing of claims will replace all prior versions of claims in the application:

Listing of Claims:

No claims are canceled. Claims 17, 20, and 21 are amended. Claims 22-50 are added.

1. (Original) An apparatus for determining the position of incidence of radiation, comprising:

a solid-state device with internal gain, and

a means for using charge separation to obtain electrical signals from said device in response to incidence of radiation,

whereby the position of incidence of radiation is calculated using a plurality of said electrical signals.

2. (Original) The apparatus of claim 1, wherein said solid-state device is an avalanche photodiode.

3. (Original) The apparatus of claim 1, wherein said solid-state device is a solid state photomultiplier.

4. (Original) The apparatus of claim 1, further comprising:

a means for calculating from said electrical signals the energy of the incident radiation.

5. (Original) The apparatus of claim 4, wherein said solid-state device is an avalanche photodiode.

6. (Original) The apparatus of claim 1, further comprising:

a means for calculating from said electrical signals the energy of the incident radiation, and

a means for calculating from said electrical signals the time of incidence of pulsed radiation.

7. (Original) The apparatus of claim 6, wherein said solid-state device is an avalanche photodiode.

8. (Original) An apparatus for determining the position of incidence of radiation, comprising:

a solid-state device with internal gain,

a plurality of electrically conductive structures that use charge separation to obtain electrical signals from said device in response to incidence of radiation, and

a means for calculating the position of incidence of radiation using a plurality of said electrical signals.

9. (Original) The apparatus of claim 8, wherein said solid-state device is an avalanche photodiode.

10. (Original) The apparatus of claim 8, wherein said solid-state device is a solid state photomultiplier.

11. (Original) The apparatus of claim 8, further comprising:

a means for calculating from said electrical signals the energy of the incident radiation.

12. (Original) The apparatus of claim 11, wherein said solid-state device is an avalanche photodiode.

13. (Original) The apparatus of claim 8, further comprising:

a means for calculating from said electrical signals the energy of the incident radiation, and

a means for calculating from said electrical signals the time of incidence of pulsed radiation.

14. (Original) The apparatus of claim 13, wherein said solid-state device is an avalanche photodiode.

15. (Original) The apparatus of claim 8, further comprising:

one or more termination lines between the conductive structures, disposed to eliminate geometric distortion in the electrical signals.

16. (Original) The apparatus of claim 8, further comprising:

a means of correcting for geometric distortion in coordinates calculated from said electrical signals using a termination line or lines between said conductive structures.

17. (Currently amended) A method for determining the position of incidence of radiation on a solid state device with internal gain, comprising: ~~the steps of~~:

arranging a plurality of electrically conductive structures with respect to said solid state device that obtain by charge separation electrical signals from said device in response to incidence of radiation, and

calculating the position of incidence of said radiation using a plurality of said electrical signals.

18. (Original) The method of claim 17, wherein said solid-state device is an avalanche photodiode.

19. (Original) The method of claim 17, wherein said solid-state device is a solid state photomultiplier.

20. (Currently amended) A method of measuring the energy of incident radiation on a position sensitive solid state detector with internal gain, comprising: ~~the steps of~~

extracting an electrical signal from a single contact that indicates the total energy incident on said detector, and

calculating said total incident energy from said electrical signal.

21. (Currently amended) The method of claim 20, further comprising ~~the step of~~ obtaining the time of incidence from said electrical signal.

22. (New) The apparatus of claim 1, wherein said calculation of said position of incidence of radiation corrects for geometric distortion of position information in said electrical signals.

23. (New) The apparatus of claim 1, wherein said electrical signals are obtained by resistive, rise time, or capacitive coupling.

24. (New) The apparatus of claim 1, wherein said electrical signals are obtained by inductive coupling.

25. (New) The apparatus of claim 1 further comprising at least one scintillator element coupled to said solid state device, wherein said scintillator produces said radiation.

26. (New) The apparatus of claim 2 further comprising a guard ring field spreading structure to prevent edge breakdown under high reverse bias.

27. (New) The apparatus of claim 2 further comprising a diffused bevel field spreading structure to prevent edge breakdown under high reverse bias.

28. (New) The apparatus of claim 2 further comprising a mechanical bevel field spreading structure to prevent edge breakdown under high reverse bias.

29. (New) The apparatus of claim 8, wherein said means for calculation of said position of incidence of radiation corrects for geometric distortion of position information in said electrical signals.

30. (New) The apparatus of claim 8, wherein said radiation is produced by at least one scintillator element.

31. (New) The device of claim 8 wherein a region of said solid-state device between said electrically conductive structures has a higher resistivity than said plurality of electrically conductive structures.

32. (New) The apparatus of claim 9 further comprising a guard ring field spreading structure to prevent edge breakdown under high reverse bias.

33. (New) The apparatus of claim 9 further comprising a diffused bevel field spreading structure to prevent edge breakdown under high reverse bias.

34. (New) The apparatus of claim 9 further comprising a mechanical bevel field spreading structure to prevent edge breakdown under high reverse bias.

35. (New) The method of claim 17, further comprising processing said electrical signals to correct for geometric distortion of position information.

36. (New) The method of claim 17, wherein said radiation is produced by at least one scintillator element.

37. (New) The method of claim 17, wherein said calculating said position of incidence uses electrical signals obtained by resistive, rise time, or capacitive coupling of said electrical signals to an amplifier.

38. (New) The method of claim 17, wherein said calculating said position of incidence uses electrical signals obtained by inductive coupling of said electrical signals to an amplifier.

39. (New) The apparatus of claim 18 further comprising a guard ring field spreading structure to prevent edge breakdown under high reverse bias.

40. (New) The apparatus of claim 18 further comprising a diffused bevel field spreading structure to prevent edge breakdown under high reverse bias.

41. (New) The apparatus of claim 18 further comprising a mechanical bevel field spreading structure to prevent edge breakdown under high reverse bias.

42. (New) An apparatus for determining the position of incidence of radiation, comprising:

a solid-state device with internal gain that uses charge separation to obtain electrical signals from said device in response to incidence of radiation on said solid-state device,

wherein the position of incidence of radiation on said solid-state device is calculated using a plurality of said electrical signals.

43. (New) The apparatus of claim 42, wherein said solid-state device is an avalanche photodiode.

44. (New) The apparatus of claim 42, wherein said solid-state device is a solid state photomultiplier.

45. (New) The apparatus of claim 42, further comprising:

a means for calculating from said electrical signals the energy of the incident radiation.

46. (New) The apparatus of claim 45, wherein said solid-state device is an avalanche photodiode.

47. (New) The apparatus of claim 42, further comprising:

a means for calculating from said electrical signals the energy of the incident radiation, and

a means for calculating from said electrical signals the time of incidence of pulsed radiation.

48. (New) The apparatus of claim 43 further comprising a guard ring field spreading structure to prevent edge breakdown under high reverse bias.

49. (New) The apparatus of claim 43 further comprising a diffused bevel field spreading structure to prevent edge breakdown under high reverse bias.

50. (New) The apparatus of claim 43 further comprising a mechanical bevel field spreading structure to prevent edge breakdown under high reverse bias.